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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------------|------------------|
| 10/734,676 | 12/15/2003 | Mitsuhiko Ogihara | MAE 304 | 6298 |
| 23995 | 7590 | 05/09/2005 | | |
| RABIN & Berdo, PC 1101 14TH STREET, NW SUITE 500 WASHINGTON, DC 20005 | | | EXAMINER SMOOT, STEPHEN W. | |
| | | | ART UNIT 2813 | PAPER NUMBER |

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/734,676 | OGIHARA ET AL. | |
| | Examiner | Art Unit | |
| | Stephen W. Smoot | 2813 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 15 December 2003.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,2,5-9,11,15-17 and 20-24 is/are rejected.
 7) Claim(s) 3,4,10,12-14,18 and 19 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 15 December 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12-15-03</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to application papers filed on 15 December 2003. Per 37 CFR 1.126, claims 21-25 have been renumbered as claims 20-24, respectively.

Specification

1. The disclosure is objected to because of the following informality:

On page 16, line 15, change "214s" to --214-- because Fig. 9 does not use 214s as a reference number.

Appropriate correction is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claims 18-19, 21, 23-24 are objected to because of the following informalities:
 - In claim 18, line 2, change "number" to --a number-- to correct grammar;
 - In claim 19, line 2, change "number" to --a number-- to correct grammar;
 - In claim 19, line 3, change "number" to --a number-- to correct grammar;
 - In renumbered claim 21, line 1, change the claim dependency from "claim 21" to -
-claim 20-- because claim 21 has been renumbered as claim 20;
 - In renumbered claim 23, line 1, change the claim dependency from "claim 23" to -
-claim 22-- because claim 23 has been renumbered as claim 22;
 - In renumbered claim 23, line 4, change "optical printing head" to --optical print
head-- for proper antecedence to renumbered claim 22; and
 - In renumbered claim 24, line 1, change the claim dependency from "claim 24" to
--claim 23-- because claim 24 has been renumbered as claim 23.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

5. Claims 15, 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "said first interdielectric layer" in lines 2-3; and

Claim 21 recites the limitation "the first thin semiconductor film" in line 2.

There is insufficient antecedent basis for these limitations in claims 15, 21.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 7-8, 11, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Noguchi et al. (US 5,211,761).

Referring to Fig. 1 and column 2, line 37 to column 5, line 2, Noguchi et al. disclose a photovoltaic (i.e. light sensing) device that includes the following features:

- A substrate (1) that can be made of quartz glass or of ceramics;
- An adhesion enhancing layer (2) that can be polycrystalline silicon (2) deposited on the substrate (1);

- The photovoltaic device comprises three polycrystalline silicon thin films (3, 4, 5) and two electrodes (6, 7) formed over the adhesion enhancing layer (2); and
- The lowermost polycrystalline silicon thin film (3) is bonded on the adhesion enhancing layer (2).

These are all of the limitations set forth in claims 1, 7-8, 11, 17 of the applicant's invention.

8. Claims 1-2, 5-9, 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugawara et al. (US 2002/0030197 A1).

Referring to Fig. 4 and paragraphs [0072] to [0078], Sugawara et al. disclose a semiconductor white light emitting device that includes the following features:

- A sapphire substrate (104) (i.e. a ceramic substrate) that is part of a blue light emitting device (1) (also see paragraph [0053]);
- The blue light emitting device (1) also includes group III nitride compound semiconductor layers (105, 106, 107, 108, 109);
- An InAlP cladding layer (103) is used as an adhesive layer to bond a yellow light emitting laminate (2) onto the sapphire substrate (104) (also see paragraph [0063]);
- The yellow light emitting laminate (2) includes a light emitting layer (102) of an InAlP/InGaAlP multilayer film that is bonded on the InAlP cladding layer (103) (also see paragraphs [0062] and [0063]);

- The blue light emitting device (1) includes integral electrodes (110, 111) for operating the semiconductor white light emitting device.

These are all of the limitations set forth in claims 1-2, 5-9, 16-17 of the applicant's invention.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. (US 2002/0030197 A1) as applied to claim 1 above, and further in view of Fukasawa (US 2002/0180861 A1).

As shown above, Sugawara et al. anticipate claim 1 of the applicant's invention. However, Sugawara et al. do not expressly teach or suggest using their light emitting device in an optical print head (the limitations of claims 20-21) that is further incorporated into an image forming apparatus (the limitations of claims of claims 22-24). Referring to Figs. 4, 7 and paragraphs [0049] to [0057], Fukasawa teaches an optical printer head that includes a light emitting element array (5) and a rod lens array (10), which implies a fixed (i.e. clamped) arrangement between the light emitting element

array (5) and the rod lens array (10). The light emitting element array (5) is shown supported on a base structure in Fig. 7. The rod lenses (1) are held in position by a pair of side panels (2). The rod lens array (10) focuses an image (4) emitted from the light emitting element array (5) onto the surface of a photosensitive drum (6), which is part of an optical printer (100) as shown in Fig. 9 and as described in paragraphs [0072] to [0079]. Referring to Fig. 9, an electrostatic latent image is formed through exposure of photosensitive drum (106) to light from an LED array (105) that is focused through a rod lens array (101). The optical printer (100) further includes a developing unit (102) to develop the electrostatic latent image with toner and a transfer charger (107) to transfer the developed image to, for example, a sheet of paper.

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Sugawara et al. and Fukasawa in order to incorporate the light emitting device, as taught by Sugawara et al., as the individual light emitting diodes used in the LED array of Fukasawa. Fukasawa recognizes that an LED array can be used for exposing the photosensitive drum of an optical printer (see paragraph [0073]).

Allowable Subject Matter

11. Claims 3-4, 10, 12-14, 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

- Claims 3-4 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a semiconductor structure that includes an adhesion layer mainly consisting of semiconductor material disposed on a substrate and a semiconductor thin film bonded on the adhesion layer, wherein an interdielectric layer is disposed between the substrate and the adhesion layer;
- Claim 10 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a semiconductor structure that includes an adhesion layer mainly consisting of semiconductor material disposed on a substrate and a semiconductor thin film bonded on the adhesion layer, wherein an electrically conductive layer is disposed between the adhesion layer and the semiconductor thin film;
- Claims 12-14 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a semiconductor structure that includes an adhesion layer mainly consisting of semiconductor material disposed on a substrate and a semiconductor thin film bonded on the adhesion layer, further comprising an interconnecting layer for electrically connecting a semiconductor device that corresponds to the semiconductor thin film to an integrated circuit that corresponds to the substrate;

- Claim 18 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a semiconductor structure that includes an adhesion layer mainly consisting of semiconductor material disposed on a substrate and a semiconductor thin film bonded on the adhesion layer, wherein the semiconductor thin film includes a plurality of semiconductor devices arranged at regular intervals; and
- Claim 19 would be allowable because the prior art of record does not teach or suggest, in combination with the other claim limitations, a semiconductor structure that includes an adhesion layer mainly consisting of semiconductor material disposed on a substrate and a semiconductor thin film bonded on the adhesion layer, wherein a plurality of semiconductor thin films are arranged on the adhesion layer at regular intervals.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yasukawa and Hata et al. teach structures that feature semiconductor layers that function as adhesion layers.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

Art Unit: 2813

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sws

*Stephen W. Smoot
Patent Examiner
Art Unit 2813*